PARIJATAK
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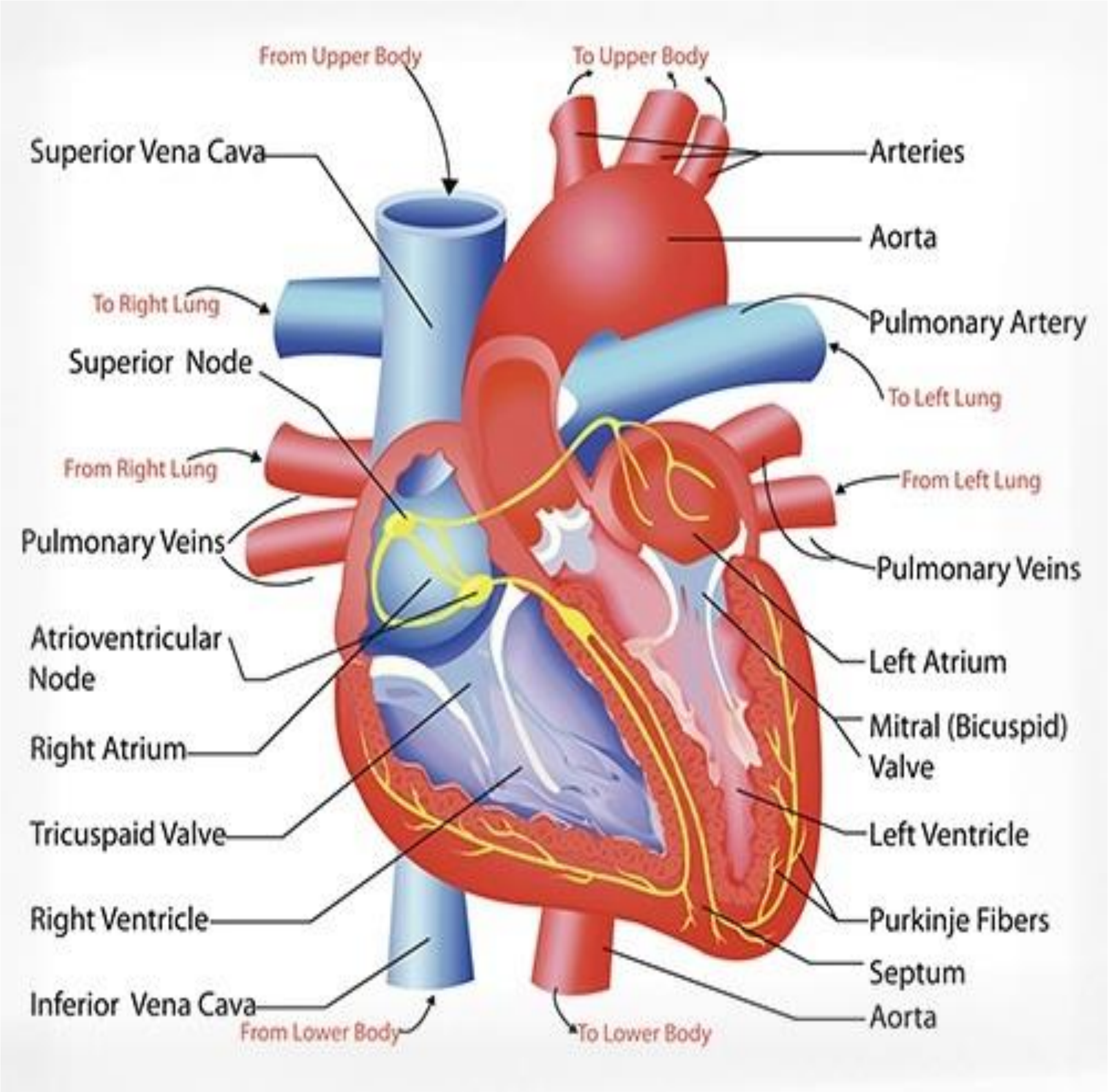
संस्कारो गुणान्तरारोपणम्

The Cardiovascular System



- **2 upper chambers**

Right and left atria

- **2 lower chambers**

Right and left ventricle

Right and left ventricle

- **2 Atrioventricular valves** (Mitral & Tricuspid)

Open with ventricular diastole

Close with ventricular systole

- **2 Semilunar Valves** (Aortic & Pulmonic)

Open with ventricular systole

Open with ventricular diastole

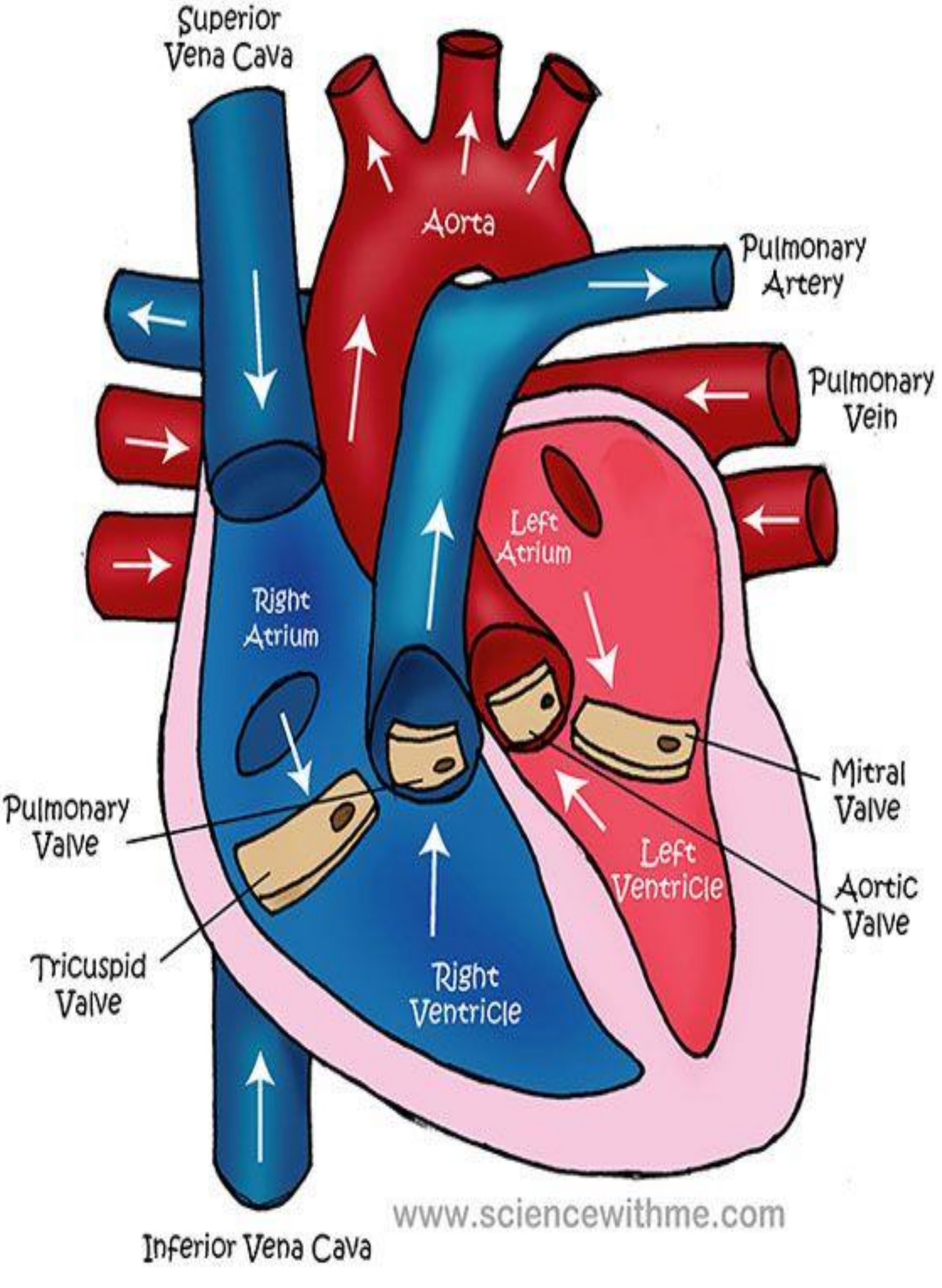
- **Pulmonary Circulation**

Unoxygenated – right side of the heart

- **Systemic Circulation**

Oxygenated – left side of the heart

How It Works


Superior Vena Cava
Aorta
Pulmonary Artery
Pulmonary Vein
Left Atrium
Right Atrium
Pulmonary Valve
Mitral Valve
Left Ventricle
Aortic Valve
Tricuspid Valve
Right Ventricle
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Inferior Vena Cava

Anatomy Coronary Arteries

- **2 major vessels of the coronary circulation**
  - Left main coronary artery
  - Left anterior descending and circumflex branches
  - Right main coronary artery

- The left and right coronary arteries originate at the base of the aorta from openings called the coronary ostia behind the aortic valve leaflets.

- **Cardiac cycle**
  - Represents the actual time sequence between ventricular contraction and ventricular relaxation
- **Systole**
  - Simultaneous contraction of the ventricles

- **Diastole**
  - Synonymous with ventricular relaxation
  - When ventricles fill passively from the atria to 70% of blood capacity

EASI Lead

Lead Placement

Background, scope and purpose of the guidelines Of an estimated 58 million deaths globally from all causes in 2005, cardiovascular disease (CVD) accounted for 30%. This proportion is equal to that due to infectious diseases, nutritional deficiencies, and maternal and perinatal conditions combined .

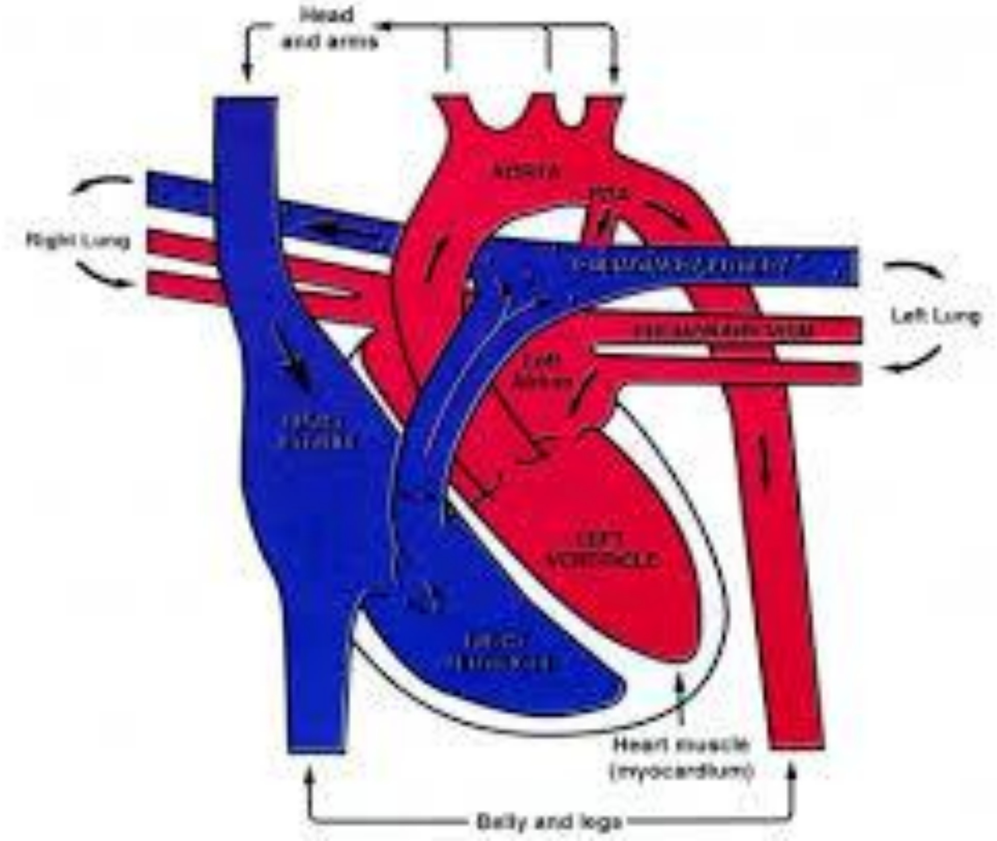
It is important to recognize that a substantial proportion of these deaths (46%) were of people under 70 years of age, in the more productive period of life; in addition, 79% of the disease burden attributed to cardiovascular disease is in this age group .

Between 2006 and 2015, deaths due to noncommunicable diseases (half of which will be due to cardiovascular disease) are expected to increase by 17%, while deaths from infectious diseases, nutritional deficiencies, and maternal and perinatal conditions combined are projected to decline by 3% .

Almost half the disease burden in low- and middle-income countries is already due to noncommunicable diseases .

A significant proportion of this morbidity and mortality could be prevented through populationbased strategies, and by making cost-effective interventions accessible and affordable, both for people with established disease and for those at high risk of developing disease.

The total risk approach to prevention of cardiovascular disease



Rationale for targeting high-risk groups The debilitating and often fatal complications of cardiovascular disease (CVD) are usually seen in middle-aged or elderly men and women. However, atherosclerosis – the main pathological process leading to coronary artery disease, cerebral artery disease and peripheral artery disease – begins early in life and progresses gradually through adolescence and early adulthood .

It is usually asymptomatic for a long period. The rate of progression of atherosclerosis is influenced by cardiovascular risk factors: tobacco use, an unhealthy diet and physical inactivity (which together result in obesity), elevated blood pressure (hypertension), abnormal blood lipids (dyslipidaemia) and elevated blood glucose (diabetes). Continuing exposure to these risk factors leads to further progression of atherosclerosis, resulting in unstable atherosclerotic plaques, narrowing of blood vessels and obstruction of blood flow to vital organs, such as the heart and the brain.

The clinical manifestations of these diseases include angina, myocardial infarction, transient cerebral ischaemic attacks and strokes. Given this continuum of risk exposure and disease, the division of prevention of cardiovascular disease into primary, secondary and tertiary prevention is arbitrary, but may be useful for development of services by different parts of the health care system.

Life Habit Risk Factors

▶ Smoking

Smoking is the most important modifiable risk factor for CHD, accounting for 400,000 deaths annually.

CARDIAC AND VASCULAR RISK

▶ Obesity adversely influences other vascular risk factors, causing hypertension, dyslipidemia, glucose intolerance, and insulin resistance.

Obesity is independently associated with left ventricular hypertrophy (LVH), while weight loss can reduce left ventricular mass.

Waist-to-hip ratio, a surrogate for abdominal obesity, is an independent marker of vascular risk for women and older men. Waist circumference measurements indicating increased risk are greater than 40 inches in men and 35 inches in women.

▶Physical inactivity

▸ Mortality data suggests that more than 200,000 deaths result from inactivity annually.

▶ Physical inactivity is associated with other CHD risk factors including decreased HDL-C, insulin resistance, and hypertension.

▶ Physically fit but overweight people have a CHD risk similar to that of people without CHD risk factors.

▶ Diet and nutrition

▸ The effect of diet on risk is mediated through lipids, BP, and obesity.

▶ The Mediterranean diet, which is rich in monounsaturated fats as well as fruits and vegetables, is of growing interest.

▶ Alcohol abuse

▸ The relative risk of death from cardiovascular disease (CVD) in moderate drinkers compared to nondrinkers was 0.7 in men and 0.6 in women

stroke.

PERIPHERAL VASCULAR DISEASE Risk

Identification Peripheral vascular disease (PVD) is a manifestation of the atherosclerotic process that affects 12% to 14% of the general population.

▶ Approximately one half of the 8.4 million Americans with PVD are symptomatic.

▶ An estimated 840,000 present with critical leg ischemia.

- Approximately 3.4 million present with symptoms of intermittent claudication (IC).
- The prevalence of symptoms of IC increases with age.
- 5% of men and 2.5% of women over age 60 experience symptoms of IC.
- Three times as many have an abnormal ankle brachial index.
- Symptoms of IC are usually stable over a 5- to 10-year period.
- 73% have no significant change in symptoms.
- 16% experience deterioration in symptoms.

Precaution

Eat to be your best. Add plenty of fruits and veggies, grains, and foods high in omega-3 fatty acids like fresh tuna or herring to your diet. Cut down on salt, saturated fats, sweets, and red meats. Avoid trans fats and food with “hydrogenated” or “partially hydrogenated” ingredients. Variety in your diet is a good way to get all the nutrients you need.

Take it easy. Find a relaxation method that works for you. Yoga, meditation, dedicated time to unwind after work -- these can help keep your stress levels down. Stressful emotions such as anger and hostility may also lead to heart attack risk, so keep calm and be cool.

Ban smoking. If you never started smoking, that’s perfect! If you already quit, excellent. If you still smoke, stop. Talk to your doctor to find out what method will work best for you. Even people who smoke fewer than five cigarettes a day can have early signs of heart disease. Start now. In just 1 year you can reduce your risk of a heart attack.

Keep tabs on your blood pressure. If it’s too high, your risk of a heart attack and heart disease goes up. Stress management, a healthy diet, and regular exercise can help you manage your blood pressure. Your doctor may also prescribe medications to lower your levels.